Dr. Ryan J. Giordano

Contact Information

1121 Colusa Ave.
Berkeley, CA, 94707
USA

✉ rgiordano@berkeley.edu
rgiordan.github.io
☎ (805) 501-6754

Education

University of California Berkeley, CA USA 2013–2019
Ph.D., Statistics. Advisors: M. I. Jordan, J. McAuliffe, T. Broderick
Thesis: *On the Local Sensitivity of M-Estimation: Bayesian and Frequentist Applications*

London School of Economics, London, UK 2006–2008
MSc., Econometrics.

University of Illinois Urbana-Champaign, IL, USA 1997–2002
BA., Mathematics.
BS., Theoretical and Applied Mechanics.

Professional Experience

University of California Berkeley, CA USA 2023–present
Assistant professor of statistics.

Massachusetts Institute of Technology, Cambridge, MA USA 2019–2023
Department of EECS, Laboratory for Information & Decision Systems
Postdoctoral Research Fellow. Advisor: Tamara Broderick

Google Inc., Mountain View, CA USA 2009–2013
Senior Engineer, Quantitative Analysis

Macquarie Group, London, UK 2008
Risk Management Intern

United States Peace Corps, Kokshetau, KZ 2004–2006
Education Volunteer, successful completion of service

Hewlett-Packard, Boise, ID 2002–2004
Lifetest Coordinator and Reliability Engineer

Honors and Awards

Selected for the Nov 5th 2021 Gary Chamberlain Online Seminar in Econometrics (2021)
Notable Paper Award, Artificial Intelligence and Statistics (AISTATS) (2019)
Travel Award, Artificial Intelligence and Statistics (AISTATS) (2019)
Travel Award, Bayesian Nonparametrics Conference (2019)
Student Paper Award, ASA Section on Bayesian Statistical Science (2018)
Travel Award, International Society for Bayesian Analysis (ISBA) (2018)
Berkeley Institute for Data Science Fellow (2017–19)
Junior Travel Support Grant, International Society for Bayesian Analysis (ISBA) Bayes Comp (2016)
Spotlight Paper, Neural Information Processing Systems (NeurIPS) (2015)
Outstanding Graduate Student Instructor Award (2015)
Travel Award, Neural Information Processing Systems Workshop on Variational Inference (2014)
Hertz Foundation Graduate Fellowship Finalist (2014)
Google Operating Committee Award (2010)
Advanced-high speaker of Russian in Peace Corps Aptitude Test (2006)
Advanced-mid speaker of Kazakh in Peace Corps Aptitude Test (2006)
Selected as a Peace Corps "Success Story" for a congressional report (2005)
Best Project, Undergraduate Mechanics Research Conference (2002)
Best Presentation, Undergraduate Mechanics Research Conference (2002)
Seely, Sinclair, Stippes, TAM Merit Scholarships (1998–2002)

Under Review

Giordano, R., Ingram, M., Broderick, T., "Black Box Variational Inference with a Deterministic Objective: Faster, More Accurate, and Even More Black Box". In: *arXiv preprint arXiv:2304.05527* (2023).

Kasprzak, M., **Giordano, R.**, Broderick, T., "How good is your Gaussian approximation of the posterior? Finite-sample computable error bounds for a variety of useful divergences". In: *arXiv preprint arXiv:2209.14992* (2022).

Broderick, T., **Giordano, R.**, Meager, R., "An automatic finite-sample robustness metric: When can dropping a little data make a big difference?" In: *arXiv preprint arXiv:2011.14999* (2020). (Author order alphabetical; Giordano and Meager are joint lead authors.)

Published

Berlinghieri, R., Trippe, B., Burt, D., **Giordano, R.**, Srinivasan, K., Özgökmen, T., Xia, J., Broderick, T., "Gaussian processes at the Helm(holtz): A more fluid model for ocean currents". In: *Proceedings of the 40th International Conference on Machine Learning*. Proceedings of Machine Learning Research. PMLR, 2023.

Giordano, R., Liu, R., Jordan, M. I., Broderick, T., "Evaluating Sensitivity to the Stick-Breaking Prior in Bayesian Nonparametrics (with Discussion)". In: *Bayesian Analysis* 18.1 (2023), pp. 287–366.

Giordano, R., Stephenson, W., Liu, R., Jordan, M. I., Broderick, T., "A Swiss Army Infinitesimal Jackknife". In: *The 22nd International Conference on Artificial Intelligence and Statistics*. 2019, pp. 1139–1147.

Giordano, R., Broderick, T., Jordan, M. I., "Covariances, Robustness, and Variational Bayes". In: *Journal of Machine Learning Research* 19.51 (2018), pp. 1–49. URL: `http://jmlr.org/papers/v19/17-670.html`.

Regier, J., Pamnany, K., Fischer, K., Noack, A., Lam, M., Revels, J., Howard, S., **Giordano, R.**, Schlegel, D., McAuliffe, J., "Cataloging the Visible Universe through Bayesian Inference at Petascale". In: *2018 IEEE International Parallel and Distributed Processing Symposium (IPDPS)*. IEEE. 2018, pp. 44–53.

Giordano, R., Broderick, T., Jordan, M. I., "Linear response methods for accurate covariance estimates from mean field variational Bayes". In: *Advances in Neural Information Processing Systems*. 2015, pp. 1441–1449.

Winther, R., **Giordano, R.**, Edge, M., Nielsen, R., "The mind, the lab, and the field: Three kinds of populations in scientific practice". In: *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 52 (2015), pp. 12–21.

Preprints

Giordano, R., Broderick, T., "The Bayesian Infinitesimal Jackknife for Variance". In: *arXiv preprint arXiv:2305.06466* (2023).

Shiffman, M., **Giordano, R.**, Broderick, T., *Could dropping a few cells change the takeaways from differential expression?* 2023. arXiv: `2312.06159 [q-bio.QM]`.

Giordano, R., Jordan, M. I., Broderick, T., "A higher-order swiss army infinitesimal jackknife". In: *arXiv preprint arXiv:1907.12116* (2019).

Invited Talks

Flatiron institute Bayesian Reading Group — May 2023
Black Box Variational Inference with a Deterministic Objective

BayesComp 2023 (Robustness to Model Misspecification session) — March 2023
Frequentist Covariances of Posterior Expectations with the Bayesian Infinitesimal Jackknife

Stanford Statistics Seminar — July 2022
An Automatic Finite-Sample Robustness Metric: Can Dropping a Little Data Make a Big Difference?

NeurIPS 2021 Bayesian Deep Learning Workshop — December 2021
Frequentist Covariances of Posterior Expectations with the Bayesian Infinitesimal Jackknife

Johns Hopkins Bayesian Learning And Spatial Temporal (BLAST) working group — October 2021
Variational Methods for Latent Variable Problems

New England Statistical Society (NESS) annual meeting — October 2021
Frequentist Covariances of Posterior Expectations with the Bayesian Infinitesimal Jackknife

Joint Statistical Meetings (JSM) — August 2021
An Automatic Finite-Sample Robustness Metric: Can Dropping a Little Data Change Conclusions?

International Society for Bayesian Analysis Annual Meeting — June 2021
Frequentist Covariances of Posterior Expectations with the Bayesian Infinitesimal Jackknife

ISBA-BNP series webinar — May 2021
Assessing Sensitivity to the Stick-Breaking Prior in Bayesian Nonparametrics

Harvard Graduate School of Education Miratrix CARES lab — Feubruary 2021
An Automatic Finite-Sample Robustness Metric: Can Dropping a Little Data Change Conclusions?

Splunk Statistics Seminar Series — October 2019
A Higher-Order Swiss Army Infinitesimal Jackknife

Google Statistics Journal Club — September 2019
On the Local Sensitivity of M-estimation: Bayesian and Frequentist Applications

Perlmutter Research Group — June 2019
Variational Methods for Latent Variable Problems

Contributed Talks

BAYSM Bayesian Young Statisticians Meeting — Nov 2023
Black Box Variational Inference with a Deterministic Objective

BAYSM Bayesian Young Statisticians Meeting — August 2021
Assessing Sensitivity to the Stick-Breaking Prior in Bayesian Nonparametrics

BAYSM Bayesian Young Statisticians Meeting — November 2020
Effortless Frequentist Covariances of Posterior Expectations in Stan

StanCon — July 2020
Effortless Frequentist Covariances of Posterior Expectations in Stan

Berkeley Statistics Student Seminar Series — April 2019
Sensitivity and Uncertainty in Variational Bayes with an Application to the EM Algorithm

12th International Conference on Bayesian Nonparametrics, Oxford, UK — June 2019
Evaluating Sensitivity to the Stick Breaking Prior in Bayesian Nonparametrics

Berkeley Institute for Data Science Lunchtime Seminar Series — October 2018
Sensitivity, Uncertainty, and Automatic Differentiation

Berkeley Institute for Data Science Lunchtime Seminar Series — July 2018
Bayesian Inference and Inverse Problems

StanCon — January 2018

Automatic Robustness Measures in Stan

Berkeley BSTARS Conference — March 2017
How Bad Could it Be? Worst-case Prior Sensitivity Estimates for Variational Bayes

Berkeley BSTARS Conference — March 2016
Measuring Robustness with Variational Bayes

Berkeley–Stanford Student Joint Colloquium — November 2014
Covariance Matrices for Mean Field Variational Bayes

Joint Statistical Meetings (JSM) — August 2013
Estimating Average Proportional Changes in Large, Sparse Data

Professional Service

Student Leadership

University of California, Berkeley, Statistics Department

- Diversity Taskforce Member — 2018–2019
- Graduate Student Mentor — 2017–2019
- Diversity Committee Member — 2017
- Co-organizer of the Gender and Diversity Roundtable — 2016–2018
- Student Seminar Committee Member — 2014–2017

Universty of Illinois, Urbana-Champaign, Engineering Mechanics Department

- President, Student Society for Experimental Mechanics — 2000–2002
- Organizer, Free University Opera for Engineering Students — 2001–2002

Journal Reviewing

- Bayesian Analysis
- Journal of Machine Learning Research
- JRSS-B

Conference Reviewing

- Advances in Neural Information Processing Systems (NeurIPS)
- International Conference on Machine Learning (ICML)
- International Conference on Artificial Intelligence and Statistics (AISTATS)
- Advances in Approximate Inference (NeurIPS-adjacent workshop)
- I Can't Believe It's Not Better (NeurIPS workshop)

Teaching

University of California, Berkeley, CA, USA

- Teaching Assistant, STAT215 Applied Statistics (Graduate-level) — Fall 2014

Prison University Project, San Quentin State Prison, CA, USA

- Volunteer math teacher — Fall 2015, Spring 2016, Fall 2017

Kokshetau Elementary School #3, Kokshetau, Akhmola, Kazakhstan

- Elementary school teacher of mathematics and English as a second language — 2004–2006

University of Illinois, Urbana-Champaign, IL, USA

- Teaching Assistant, Mechanics of Materials Lab — Fall 1999
- Teaching Assistant, Introduction to Statics — Spring 1999